

sleep may raise blood pressure in patients with hypertension, placing them at increased risk of cardiovascular morbidity and mortality. Stress hormone levels increase with sleeplessness, which can activate the sympathetic nervous system, a strong player in hypertension. Patients who have chronic insomnia or other severe sleep disturbances, particularly sleep apnea, should consider consulting sleep experts. Physicians whose hypertensive patients are habitually poor sleepers should consider long-acting blood pressure medications to help counteract the increase in blood pressure that occurs in the early morning hours. People with hypertension and sleep apnea should consider aggressive treatments for the sleep disorder.

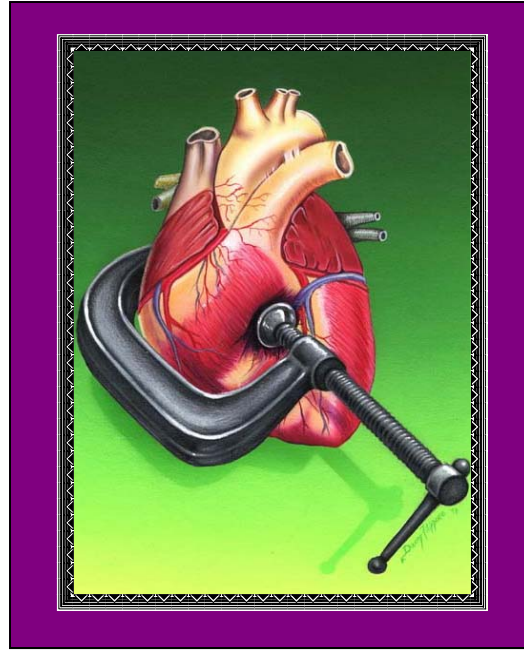
#### Stress Reduction and Psychologic Considerations

Improving mood or relieving stress may be helpful. The following are some studies suggesting possible benefits: Stress reduction programs that use cognitive-behavioral therapy may reduce blood pressure.

Active religious faith was associated with healthy blood pressure levels, possibly indicating the combined benefits of a strong social network and reduced stress from spiritual activities.

A simple relaxation technique called transcendental meditation (TM), which involves silent repetition of a single sound, was associated with lower blood pressure. It should be strongly noted that treating stress cannot cure medical problems. Any stress management program is not a substitute for standard medical treatments, but it can be a very important component in a medical regimen.

## HYPERTENSION LIFESTYLES CHANGES



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## LIFESTYLE CHANGES in the TREATMENT of HYPERTENSION

In 2002 the National High Blood Pressure Education Program Coordinating Committee published its first recommendations for preventing high blood pressure since 1993. They emphasize the following steps:

- ⌘ Engage in at least moderate exercise.
- ⌘ Maintain normal weight.
- ⌘ Limit alcohol consumption.
- ⌘ Reduce salt intake and maintain adequate potassium intake.
- ⌘ Consume a diet rich in fruits, vegetables, and low-fat dairy products while reducing total and saturated fat intake. (The DASH diet is one way of achieving such a dietary plan.)

Important studies have reported that such healthy lifestyle change can lower blood pressure as well as improve other risk factors for heart disease and poor health, including in people on anti-hypertensive medications.

#### DASH Diet

The DASH diet (Dietary Approaches to Stop Hypertension) is proving to help lower blood pressure after eight weeks. The dietary recommendations are as follows:

- ⌘ Avoid saturated fat (although include calcium-rich dairy products that are no- or low-fat).
- ⌘ When choosing fats, select monounsaturated oils, such as olive or canola oils. (One study reported a reduced need for anti-hypertension medication in people with a high intake of virgin olive oil, but not sunflower oil, a polyunsaturated fat.)
- ⌘ Choose whole grains over white flour or pasta products.
- ⌘ Choose fresh fruits and vegetables every day. In one 2002 study people who increased their intake of fruits and vegetables experienced a drop in blood pressure after six months. Many of these foods are rich in potassium, fiber, or both which may help lower blood pressure.
- ⌘ Include nuts, seeds, or legumes (dried beans or peas) daily.



#### Salt Restriction

A combination of the DASH diet and salt restriction is extremely effective in reducing blood pressure. (Each approach has positive benefits, but the combination is best.) Reducing sodium may also help protect against heart failure. Everyone, regardless of their blood pressure, should consume less than 2,400 milligrams (about one teaspoon) of sodium each day. The following specific groups should take particular measures to restrict salt:

People at Risk for Salt-Sensitivity (Africans, Diabetics, and the Elderly). About half of people with hypertension have blood pressure that reacts significantly to salt. Such people are known to be salt-sensitive. High-salt diets in anyone who is salt-sensitive may harm the heart, kidney, and brain and increase the risk for death, regardless of their blood pressure. (Even people with normal blood pressure can be salt-sensitive.)

Overweight People. Overweight individuals may absorb and retain sodium differently from people with normal weights. In fact, one study reported that high sodium intake was associated with an increased risk of heart disease and all-cause mortality in overweight, but not in normal weight, people. Reducing sodium can also help reduce the risk of stroke in people who are overweight. Unfortunately, because overweight people generally consume more calories, they are also likely to take in more sodium.

People on Anti-Hypertensive Drugs. Restricting salt also enhances the benefits of many standard anti-hypertensive drugs by reducing potassium loss, and may help protect against kidney disease in patients

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# LIFESTYLE CHANGES

who are also taking calcium-blocker drugs. A low-salt diet can also increase the chances for being able to stop such medications.



Simply eliminating table and cooking salt can be beneficial. Salt substitutes, such as Cardia, containing mixtures of potassium, sodium, and magnesium are available, but they are expensive. It should be noted, in any case, that about 75% of the salt in the typical diet comes from processed or commercial foods, not from food cooked at home, so the benefits of table-salt substitutes are likely to be very modest. Some sodium is essential to protect the heart, but most experts agree that the amount is significantly less than that found in the average diet. If people cannot significantly reduce the amount of salt in their diets, adding potassium-rich foods might help to restore a healthy balance.

## Potassium

Evidence now strongly indicates that a potassium-rich diet can help achieve healthy blood pressure levels, and that potassium supplements can lower systolic blood pressure by 1.8 mm Hg and diastolic blood pressure by 1 mm Hg. In fact, there is some evidence that a potassium-rich diet can reduce the risk of stroke by 22% to 40%. Current expert guidelines now support the use of potassium supplements or enough dietary potassium to achieve 3,500 mg per day for people with normal or high blood pressure (who have no risk factors for excess potassium levels). This goal is particularly important in people who have high sodium intake.

The best source of potassium is from the fruits and vegetables that contain them. Some potassium-rich foods include bananas, oranges, pears, prunes, cantaloupes, tomatoes, dried peas and beans, nuts, potatoes, and avocados. Some patients, such as those taking certain diuretics that do not spare potassium, may require supplements.

It should be noted, that excess potassium can cause abdominal distress, muscle weakness, and, in rare

cases, dangerous heart events.

## Caffeine, Alcohol, and Smoking

Smoking. Everyone should quit smoking.

Alcohol. People who drink alcohol should do so in moderation. Men with hypertension should limit their intake to an average of no more than one or two drinks a day and women and lighter people should drink less.

Caffeine Drinks. Coffee drinking is associated with small increases in blood pressure, but the risk it poses is very small in people with normal blood pressure. (Such individuals would make healthier choice, however, if they drank tea, which may have beneficial nutrients.) People with existing hypertension should avoid caffeine altogether.

## Other Dietary Considerations

Fish Oil and Omega 3 Fatty Acids. Omega 3 fatty acids (docosahexaenoic and eicosapentanoic acids) are found in oily fish. Studies are indicating that they may have specific benefits for many medical conditions, including hypertension. They appear to help keep blood vessels flexible and may also help protect the nervous system. The fatty acids are also available in supplements, although over-the-counter supplements are not regulated and their effects on health are not known. The long-term effects on blood pressure are not known.

Calcium. Calcium regulates the tone of the smooth muscles lining blood vessels, and population studies have found that people who have sufficient dietary calcium have lower blood pressure than those who do not. Hypertension itself increases calcium loss from the body. The effects of extra calcium on blood pressure, however, are mixed with some even showing higher pressure.



Some studies reported that magnesium supplements may induce small but significant reductions in blood pressure.

Antioxidant Supplements. Antioxidants are any substances that help the body eliminate oxidants, or oxy-

gen free radicals, which are damaging particles produced as part of the body's chemical processes. Vitamin C apparently also has specific benefits for hypertension by preventing dangerous effects on nitric acid, the substance that keeps arteries flexible.

## Weight Loss

In people who are overweight, even modest reductions in weight, particularly in the abdominal area, can immediately reduce blood pressure and help reduce



heart size. Weight loss, particularly accompanied by salt restriction, may allow patients with mild hypertension, even older people, to safely reduce or go off medications. The benefits of weight loss on blood pressure appear to be durable.

## Exercise

Positive Effects on Blood Pressure. Regular exercise helps keep arteries elastic, even in older people, which in turn ensures blood flow and normal blood pressure. Sedentary people have a 35% greater risk of developing hypertension than athletes do.

Experts recommend at least 30 minutes of exercise on most -- if not all-days. In one study, moderate exercise (jogging two miles per day) controlled hypertension so well that more than half the patients who had been taking drugs for high blood pressure were able to discontinue their medication.

Studies have also indicated that yoga and Tai Chi, an ancient Chinese exercise involving slow, relaxing movements, may lower blood pressure almost as well as moderate-intensity aerobic exercises.



High-intensity exercise may not lower blood pressure as effectively as moderate intensity exercise and may be dangerous in people with hypertension.

Negative Effects. Older people and those with uncontrolled hypertension or other serious medical conditions should be very cautious. Studies report that older people who begin vigorous exercise are at a slightly higher than average risk for a heart attack during the first year, but over time, regular exercise is likely to be protective.

The following activities may pose particular dangers for high-risk individuals.

- ⊗ Intense workouts (snow shoveling, slow jogging, speed walking, tennis, heavy lifting, heavy gardening). They tend to stress the heart, raise blood pressure for a brief period, and may cause spasms in the arteries leading to the heart.
- ⊗ Competitive sports, which couple intense activity with aggressive emotions.

Effects of Anti-Hypertensive Drugs on Exercise. Certain anti-hypertensive medications, including diuretics and beta-blockers, can interfere with exercise capacity. ACE inhibitors or calcium-channel blockers are the best drugs for active individuals. However, patients who must take drugs that interfere somewhat with exercise capability should still adhere to an exercise program and consult a physician on how best to balance medications with exercise.

## Good Sleep Habits

Certain sleep disorder, especially sleep apnea, is associated with hypertension. Even chronic, insufficient